

CLAIMS

What is claimed is:

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1. A transmitter comprising:

a voltage-controlled oscillator having an
operating frequency; and

an antenna, said antenna forming part of tuned
10 circuit coupled to the voltage-controlled oscillator, a
resonance point of said tuned circuit being
automatically tuned to the operating frequency of the
voltage-controlled oscillator.

15 2. The transmitter of Claim 1, wherein the voltage-
controlled oscillator is coupled serially with a phase
detector and a loop filter to form a phase-locked loop.

3. The transmitter of Claim 2, wherein the phase
20 detector is further coupled to a reference signal so
that the operating frequency of the voltage controlled
oscillator is related to the frequency of the reference
signal.

25 4. The transmitter of Claim 1, wherein a power
amplifier is coupled between the voltage controlled
oscillator and the antenna.

30 5. The transmitter of Claim 4, wherein the gain of the
power amplifier is controlled by a power controller.

6. The transmitter of Claim 5, wherein the power
amplifier, the voltage-control oscillator, and the

power controller are formed on a single integrated circuit.

7. The transmitter of Claim 2, wherein the phase-
5 locked loop further includes a prescalar and a divide-
by M circuit coupled between the oscillator and the
phase detector.

8. The transmitter of Claim 7, wherein the voltage
10 controlled oscillator and the phase-locked loop are
formed on a single integrated circuit.

9. The transmitter of Claim 1, wherein the tuned
circuit includes a differential structure of varactor
15 diodes for tuning the resonance point of the antenna to
the frequency of the oscillator.

10. The transmitter of Claim 9, wherein the varactor
diodes include an array of capacitors that can be
20 switched in and out of the tuned circuit.

11. The transmitter of Claim 9, wherein the
differential structure of varactor diodes and the
voltage-controlled oscillator are formed on a single
25 integrated circuit.

12. The transmitter of Claim 9, further including a
varactor Charge pump to provide a bias Charge for
varactor diodes in the differential structure of
30 varactor diodes.

13. The transmitter of Claim 12, wherein the
differential structure of varactor diodes, the voltage-

controlled oscillator, and the varactor charge pump are formed on a single integrated circuit.

14. The transmitter of Claim 2, further including a

5 reference oscillator supplying a signal of a reference frequency to the phase detector, wherein the reference oscillator, the voltage controlled oscillator, and the phase-locked loop are formed on a single integrated circuit.

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15. The transmitter of Claim 14, wherein the reference oscillator is of the Colpitts variety and is coupled to receive a signal from a timing device external to the single integrated circuit.

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16. The transmitter of Claim 1, further including a charge pump supplying a voltage to the voltage-controlled oscillator, wherein the charge pump and the voltage-controlled oscillator are formed on a single integrated circuit.

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17. The transmitter of Claim 1, further including a bandgap reference circuit generating reference voltages that are temperature and supply voltage stable, the
25 bandgap reference circuit and the voltage-controlled oscillator formed on a single integrated circuit.

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18. The transmitter of Claim 1, further including a shutdown mode circuit coupled to the oscillator, the
30 shutdown mode circuit and the voltage-controlled oscillator being formed on a single integrated circuit.

19. The transmitter of Claim 1, further including a data encoder coupled between a data input pad and the oscillator, the data encoder and the voltage-controlled oscillator being formed on a single integrated circuit.

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20. A method of transmitting, comprising:

generating an oscillating frequency with an oscillator within a phase-locked-loop;

10 modulating said oscillating frequency to create a modulated signal;

coupling the modulated signal to an antenna, said antenna forming part of a resonant network with the oscillator; and

15 automatically tuning a resonant point of said resonant network to the oscillating frequency.